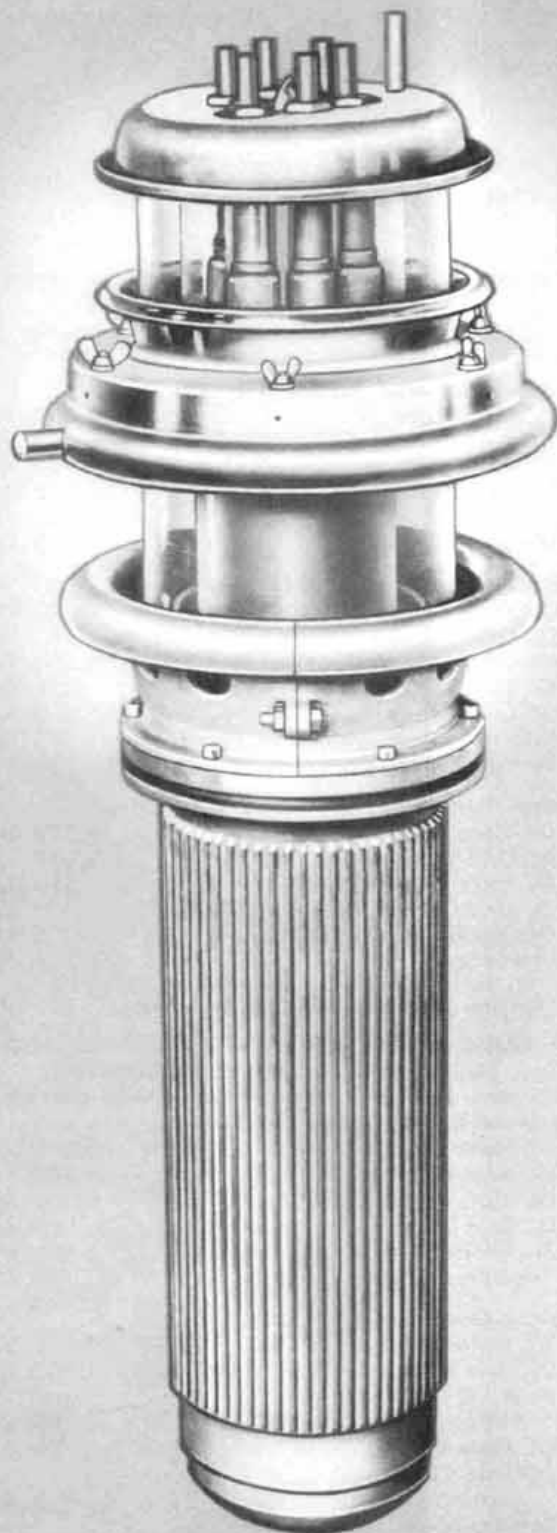




FEDERAL POWER TRIODE

Type F-134

150 Kilowatts Plate Dissipation



GENERAL DATA

DESCRIPTION:

Type F-134 is a three-electrode tube designed and manufactured by Federal for use as a radio-frequency amplifier, oscillator, or Class B modulator. The anode is water-cooled, capable of dissipating 150 Kilowatts. The cathode is a pure tungsten filament. Maximum ratings apply up to 22 megacycles.

Electrical:

► Filament Voltage	25 Volts
► Filament Current	650 Amperes
► Filament Starting Current	1,000 Amperes max.
► Filament Cold Resistance	.0022 Ohms
► Peak Cathode Current	120 Amperes
► Amplification Factor, at $E_c = -200V$ $I_b = 5A$	21
► Interelectrode Capacitances	
Grid-Plate	105 $\mu\mu f$
Grid-Filament	140 $\mu\mu f$
Plate-Filament	4 $\mu\mu f$

Mechanical:

► Mounting Position—	Vertical, anode down
► Type of Cooling—Water and Forced Air (1)	
Minimum Water Flow on Anode	40 GPM.
Maximum Outgoing Water Temperature	70° C
Air Flow	
To Grid Air Ring (2)	80 CFM
To Filament Seals (3)	40 CFM
Maximum Glass Temperature	150° C
► Net Weight, approx.	80 Pounds

(1) Water and air cooling should continue for 5 minutes after removal of power.

(2) Air pressure of 6 psi required to deliver 80 CFM at 14.7 psi and 20° C.

(3) Air pressure of 0.25 psi at entrance of 9-foot length of $\frac{3}{8}$ -inch I.D. hose to deliver 40 CFM at 14.7 psi and 20° C.

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Federal's F-134 has exhibited proven performance over a period of years in 200 KW high level modulated short-wave transmitters.

Maximum Ratings and Typical Operating Conditions

AUDIO-FREQUENCY POWER AMPLIFIER AND MODULATOR—CLASS B

Maximum Ratings, Absolute Values

DC Plate Voltage	20,000 Volts
Maximum Signal DC Plate Current†	24 Amps.
Maximum Signal Plate Input†	400 KW
Plate Dissipation†	150 KW

Typical Operation

(Unless otherwise specified, values are for two tubes)

DC Plate Voltage	12,000	14,000	14,000	Volts
DC Grid Voltage	—500	—600	—600	Volts
Peak A-F Grid-to-Grid Voltage	1,920	1,960	3,100	Volts
Zero Signal DC Plate Current	4.0	4.0	4.0	Amps.
Maximum Signal DC Plate Current	22	17.2	41	Amps.
Effective Load Resistance, Plate to Plate	2,600	4,300	680	Ohms
Max. Signal Driving Power, approx.	540	500	3,400	Watts
Max. Signal Power Output, approx.	155	155	355	KW

†Averaged over any audio-frequency cycle of sine-wave form.

RADIO-FREQUENCY POWER AMPLIFIER—CLASS B

(Carrier conditions per tube for use with a maximum modulation factor of 1.0)

Maximum Ratings, Absolute Values

DC Plate Voltage	20,000 Volts
DC Plate Current	12 Amps.
Plate Input	200 KW
Plate Dissipation	150 KW

Typical Operation

DC Plate Voltage	18,000	Volts
DC Grid Voltage	—600	Volts
Peak R-F Grid Voltage	1370	Volts
DC Plate Current	9.6	Amps.
DC Grid Current, approx.	0.0	Amps.
Driving Power, approx.‡	1.2	KW
Power Output, approx.	54	KW

‡At crest of audio-frequency cycle with modulation factor of 1.0.

PLATE-MODULATED RADIO-FREQUENCY POWER AMPLIFIER—CLASS C TELEPHONY

(Carrier conditions per tube for use with a maximum modulation factor of 1.0)

Maximum Ratings, Absolute Values

DC Plate Voltage	14,000	Volts
DC Grid Voltage	—4,000	Volts
DC Plate Current	12	Amps.
DC Grid Current	2	Amps.
Plate Input	165	KW
Plate Dissipation	100	KW

Typical Operation, Grounded Filament Circuit

DC Plate Voltage	14,000	14,000	Volts
DC Grid Voltage	—1,600	—1,600	Volts
Peak R-F Grid Voltage	2,340	2,500	Volts
DC Plate Current	9.8	11.8	Amps.
DC Grid Current, approx.	0.6	1.0	Amps.
Driving Power, approx.	1.4	3.0	KW
Power Output, approx.	108	126	KW

Typical Operation, Grounded Grid Circuit

DC Plate Voltage	12,000	Volts
DC Grid Voltage	—1,400	Volts
DC Plate Current	10	Amps.
DC Grid Current, approx.	1.0	Amp.
Driving Power, approx.*	17.5	KW
Power Output**	105	KW

*The carrier of the driver modulated 100 per cent.

**Includes power transferred from driver stage.

RADIO-FREQUENCY POWER AMPLIFIER AND OSCILLATOR—CLASS C TELEGRAPHY

(Key-down conditions per tube without amplitude modulation)††

Maximum Ratings, Absolute Values

DC Plate Voltage	20,000	Volts
DC Grid Voltage	—4,000	Volts
DC Plate Current	24	Amps.
DC Grid Current	2	Amps.
Plate Input	450	KW
Plate Dissipation	150	KW

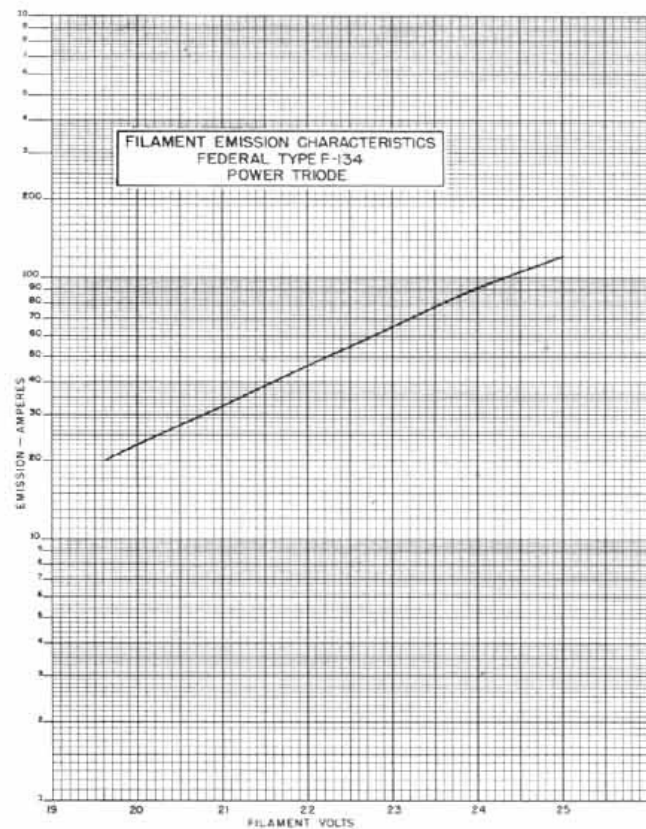
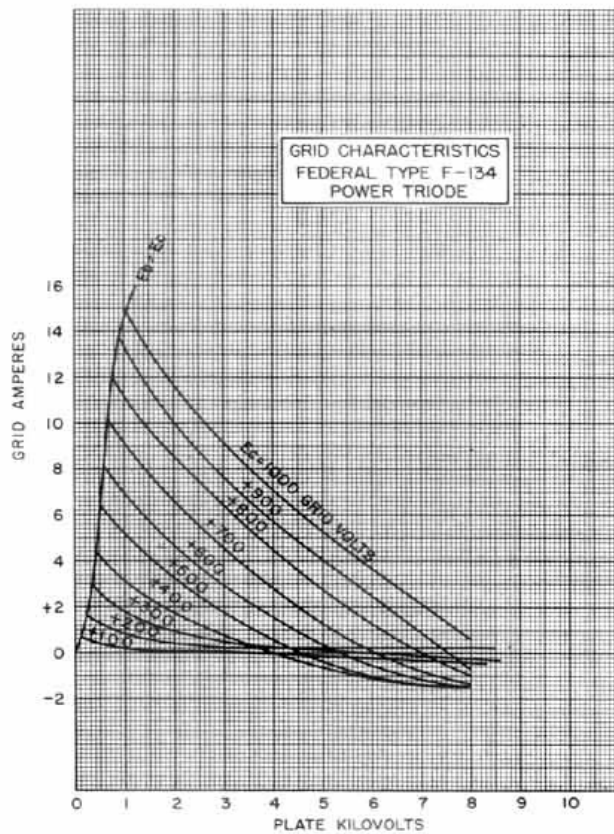
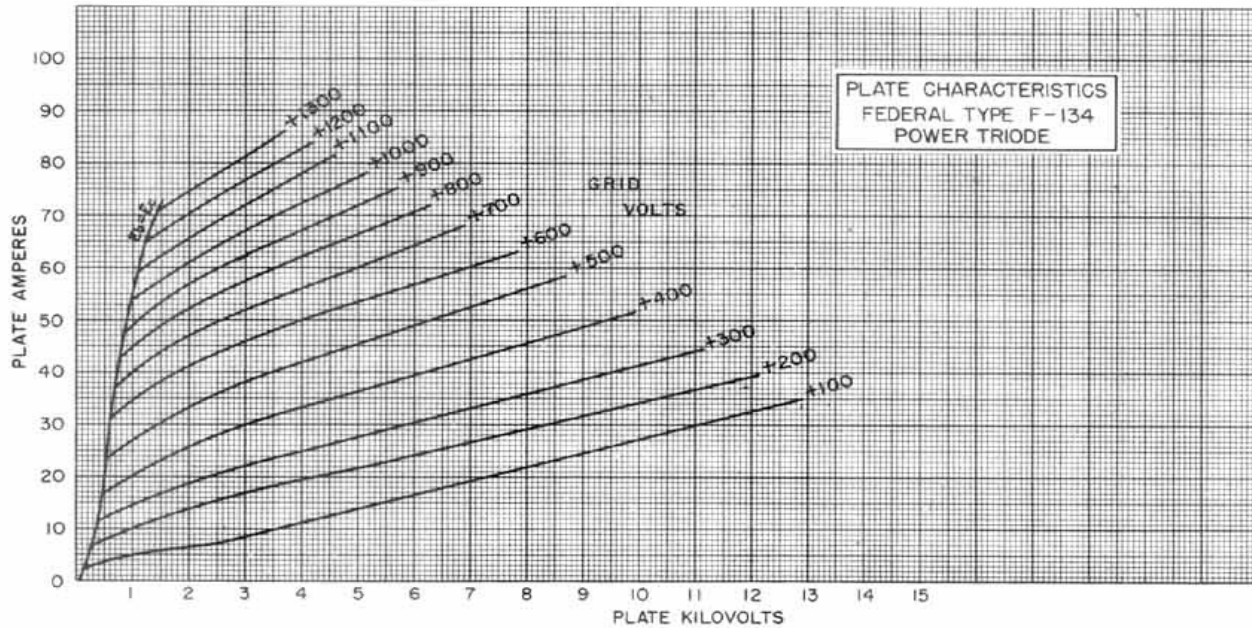
Typical Operation

DC Plate Voltage	18,000	19,000	19,000	Volts
DC Grid Voltage	—2,000	—2,200	—2,200	Volts
Peak R-F Grid Voltage	3,000	3,400	3,600	Volts
DC Plate Current	14.5	17.8	20.1	Amps.
DC Grid Current, approx.	1.0	1.1	1.8	Amps.
Driving Power, approx.	3	3.8	6	KW
Power Output, approx.	200	250	300	KW

††Modulation essentially negative may be used if the positive peak of the envelope does not exceed 115 per cent of carrier conditions.

Up to 300 KW of R-F power is available from a single F-134 tube—for use in industrial heating applications.

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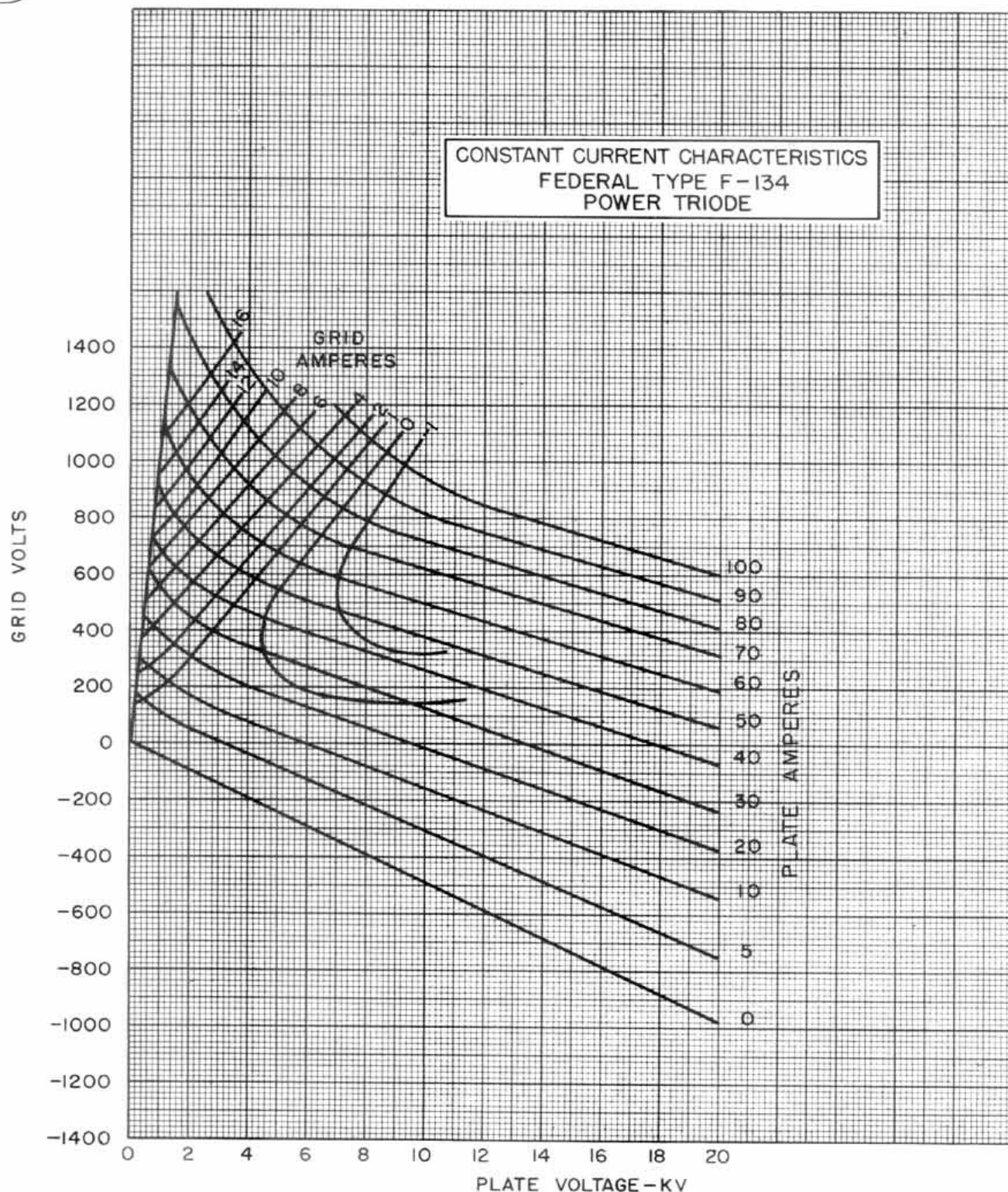
FEDERAL POWER TRIODE

Type F-134

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The ring seal grid connection in the F-134 provides a low inductance grid lead and adaptability to grounded grid circuits.



FEDERAL POWER TRIODE

Type F-134

150 Kilowatts Plate Dissipation

